

**FACT SHEET FOR NPDES PERMIT
NO. WA-004478-4**

**CITY OF KENNEWICK
PUBLICLY-OWNED TREATMENT WORKS**

SUMMARY

The City of Kennewick is seeking reissuance of its National Pollutant Discharge Elimination System (NPDES) Permit for its Publicly-Owned Treatment Works (POTW). The POTW consists of approximately 200 miles of sewers, 17 lift stations, and a wastewater treatment plant. The treatment plant provides secondary-level treatment utilizing an activated sludge process and ultraviolet (UV) disinfection, and then discharges treated wastewater through a submerged outfall to the Columbia River. Since 1998, the treatment plant has been extensively upgraded and its treatment capacities expanded.

The classification of the treatment plant has been changed from Class II to Class III, due to a combination of the increased design loadings and a revision of the regulation classifying treatment plants (Chapter 173-230 WAC). This permit allows the City until January 15, 2006 to upgrade the certifications of its treatment plant operators to comply with the regulation.

The City's record of compliance with the previous permit has been excellent. During the previous permit cycle, from August 1998 to the present, the treatment plant has discharged high-quality effluent and demonstrated no measurable toxicity in its whole effluent toxicity (WET) testing. In the area of pretreatment, the City dedicates substantial resources to proactively work with industrial and commercial dischargers to the collection system, with the result that treatment plant operations have not been upset for many years. In recognition of its excellent record of compliance, the City received the Department's Outstanding Wastewater Treatment Plant Award for operations during 2002.

During the upcoming permit cycle, the City is required to comply with the effluent limitations and monitoring program specified in this permit and the submittal of Annual Pretreatment Reports. In addition, this permit requires WET Testing during the third year of the permit cycle.

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the State is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

| GENERAL INFORMATION | |
|---------------------------|---|
| Applicant | City of Kennewick |
| Facility Name and Address | City of Kennewick Publicly-Owned Treatment Works 416 N. Kingwood Avenue Kennewick, WA 99336 |
| Type of Treatment | Activated Sludge and UV Disinfection |
| Discharge Location | Columbia River, River Mile 328.0 Latitude: 46° 12' 47" N Longitude: 119° 05' 58" W |
| Water Body ID Number | WA-CR-1028 (Old) NN57SG (New) |

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

The City of Kennewick (City) Wastewater Treatment Facility is located on the east side of the City, on the south bank of the Columbia River. The treatment plant is at the south end of the Burlington Northern Railroad bridge that crosses the river. The confluence of the Columbia and Snake Rivers is approximately two miles downstream of the facility's outfall.

History

The facility was originally constructed in 1952 as a primary treatment facility with anaerobic digestion of the primary solids. Prior to construction, wastewater was discharged directly into the Columbia River. Since its construction, there have been frequent upgrades to the treatment plant. The most recent upgrade occurred in 1998 and included:

- 1) Two mechanical barscreens at influent wet well;
- 2) A new influent pump station;
- 3) Addition of two 3 million gallon high rate aerated treatment (HRT) cells, each with two 100-HP aerator and provisions for an additional 100-HP and four 75-HP aerators in each cell;
- 4) An intermediate 90-ft diameter clarifier;

- 5) Two alum mixing chambers prior to clarifiers to promote the removal of algae;
- 6) Three additional final clarifiers;
- 7) An improved chlorination/disinfection system
- 8) New pumps for the effluent pump station; and
- 9) A new laboratory/office building.

Every component of the treatment system was upgraded during this project, with much of the equipment dating back to the original 1954 construction. The project resulted in increases of the treatment plant's maximum monthly design hydraulic loadings from 8.7 million gallons per day (MGD) to 12.2 MGD. See the DESIGN CRITERIA section of this fact sheet for further information regarding increases of other design loadings.

Collection System Status

The collection system, presently comprising approximately 226 miles of sewer mains and 17 lift stations, has been well maintained by the City. Although infiltration and inflow (I&I) into the system has been quite noticeable in the past and has averaged approximately 1.5 MGD, the City has been working to reduce inflow sources such as the approximately 0.5 mgd of filter backwash water from the City's own water treatment plant to the POTW, and the discharge of unused irrigation water to the POTW by local irrigation districts. Since issuance of the previous permit the City has, through extensive monitoring and repair efforts, significantly reduced infiltration sources. The City is presently investigating how to mitigate the flow of filter backwash water from the water treatment plant to the sanitary collection system.

Of significant importance to the collection system has been the various problems associated with grease entering the collection system. Collection system blockages have occurred at the Clover Island pumping station (adjacent to the Port of Kennewick) as well as in the City's commercial district near Clearwater Avenue. The new Sewer Use Ordinance (required by the previous permit) and the City's greatly enhanced Pretreatment Program has given treatment plant staff the tools to reduce the discharge of excessive fats, oils and grease (FOG) to the sanitary collection system.

During the previous permit cycle, many of the City's lift stations were upgraded. Pumps were either rebuilt or replaced, and electrical, ventilation and security systems were improved.

The previous permit required the City to submit an Inflow and Infiltration (I&I) Progress Report due to the Department's concerns about I&I. The report stated the City's ongoing campaign to reduce I&I resulted in the relining of 16,077 linear feet of sewer pipe and the reconstruction of 3,981 feet of sewer pipe during 1999. During 2000, the City relined 8,170 feet of sewer and reconstructed 6,308 feet of sewer.

Treatment Processes

Untreated wastewater enters the treatment plant at the influent screen building, where two mechanically-cleaned bar screens remove large solids from the influent. The bar screens are located on parallel flumes. The influent composite sampler is also located in this building.

After screening, influent flow volume is measured with a Parshall flume. A combined transducer/temperature sensor monitors the water level and influent temperature. After flow measurement, wastewater passes through the influent pump station, and into one of two force mains, up to the high rate treatment (HRT) inlet structure. The HRT inlet structure is a concrete box which splits and controls the flows into the two HRT cells. Return Activated Sludge (RAS) flow also enters the inlet structure where it mixes with the incoming wastewater.

The plant's two HRT cells provide biological treatment of wastewater using the activated sludge process. Surface aerators provide the mixing and oxygen required for this process. The HRT cells have liners and typically operate in parallel. An HRT outlet structure is located at the east end of each HRT cell. Within the outlet structure, HRT cell effluent spills over a 5-foot aluminum weir plate into a collection box. From the collection box, wastewater flows to the HRT splitter box.

The HRT splitter box collects HRT lagoon effluent and directs it to either the intermediate clarifier or the intermediate clarifier bypass pipe. Normally, flow is directed to the clarifier. The intermediate clarifier removes settleable solids, or sludge, and scum from the HRT cell effluent. Settled sludge is collected from the clarifier bottom and piped to the sludge pump station. Collected scum is routed to the scum pumping station and then to the aerated lagoons. Clarified effluent flows by gravity to the clarifier outlet structure.

Wastewater which has been treated in the HRT cells and clarified is then piped to one of two flash mix and flocculation basins, to improve the settling performance of the final clarifiers. The basins can, when necessary, utilize coagulation and flocculation processes. Coagulation chemicals, such as alum and polymer, can be mixed with the wastewater in the flash mix basins to reduce the net electrical charges of the suspended particles. In the flocculation basins, wastewater is slowly stirred to encourage suspended particles to collide into each other and form larger particles that are denser and more quickly settle. The basins operate in parallel.

Following flocculation, effluent is treated in one of seven final clarifiers. Collector flights collect and deposit settled sludge in a hopper located at the entrance to the basin. Sludge is pumped out of the hopper and into the influent pipe ahead of the influent pump station. The clarifiers also function as chlorine contact chambers when chlorine is used in lieu of, or in addition to, UV disinfection.

The City's primary method of disinfection is ultraviolet (UV) disinfection. The low-pressure, low-intensity system became operational in July 2000. UV treatment occurs after the final

clarification process. In February 2001, in response to a regional power shortage, the City turned off its UV system and disinfected effluent with the chlorination process. The chlorine disinfection system was retained because the wiring for the treatment plant's backup power generator does not physically extend to the UV building. In the event the City is utilizing chlorination as the disinfection process, chlorine is injected into the wastewater after the coagulation and flocculation processes and before final clarification. Chlorine solution is supplied by the nearby water treatment plant through a 2-inch pipe.

After clarification and disinfection, final effluent flow volume is measured at the effluent flow metering station located in a manhole north of Clarifier #7. A composite sampler is also located in the station for effluent sampling. After being sampled, final effluent flows to the effluent pump station, where it is pumped over the levee to the outfall pipe.

Discharge Outfall

Secondary treated and disinfected effluent is discharged from the facility via a 160.2-foot long, 30-inch diameter reinforced plastic pipe diffuser in the Columbia River. The diffuser has 25 risers with three ports each, for a total of 75 ports.

Residual Solids

The treatment facilities remove solids during the treatment of the wastewater at the headworks (screenings), in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Rags, scum and screenings are drained and disposed of as solid waste at the local landfill.

Biosolids

Excess sludge is wasted from the HRT/intermediate clarifier process. Sludge undergoes treatment in the aerated lagoon system. The lagoon system produces aerobically and anaerobically digested solids that settle out as biosolids after treatment. Typically, the material is about 6% solids in Lagoon #1 and 5% solids in Lagoon #2. Biosolids are land applied under a permit from the Benton-Franklin Health District. At this time, the City is in compliance with the requirements of the State's Biosolids General Permit.

Pretreatment

Three designated Significant Industrial Users (SIUs) discharge to the City's collection system. They are Welch Foods and Baker Produce, food processors, and TiSports, a producer of titanium sports equipment. The 2002 Pretreatment Report lists six Potential Significant Industrial Users (PSIUs): an anti-freeze recycler, a cannery, a commercial paint producer, a municipal street waste facility, the City's water filter plant, and a refuse transfer station. None of these industrial users have caused any problems to the POTW in recent years. The City also oversees discharges

of a large number of restaurants and other commercial concerns typical of any community the size of Kennewick. Oversight of these businesses comprise a large proportion of the workload of the City's Pretreatment (PT) Program.

In addition to submittal of an Annual Pretreatment Report, the previous permit also required an Annual Industrial User Survey. The City has combined these submittals into one document. The combined Industrial User Survey/Pretreatment Report describes in some detail: (1) the pretreatment program's staffing, (2) training given to the staff; (3) short-term and long-term program planning; and, (4) the program's efforts to provide education and support to its non-domestic dischargers.

The March 2002 report was prefaced with the following narrative: In 2001, we retooled our PT Program. We asked all of our wastewater staff, administrative support staff, and selected water distribution staff to take part in six training sessions on pretreatment during the past six months. Over many years to come, this staff will provide a great base of support for the PT Program. Our goal is to eliminate enforcement action by providing adequate education to businesses. We have reviewed countless new business license applications for applicability to our program. Our experience in being proactive with other programs in our department makes us believe our efforts will pay dividends in the future.

The Department applauds the City's proactive pretreatment efforts and is pleased with the format of the combined Industrial User Survey/Pretreatment Report. Furthermore, the Department agrees with the City that proactive efforts are more desirable than reactive enforcement actions. The Department commends the City's willingness to take an active role in managing non-domestic dischargers because the most effective and long-lasting solutions are most often local solutions.

PERMIT STATUS

The previous permit for this facility was issued on June 12, 1998. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), pH, Fecal Coliform Bacteria, Total Ammonia and Total Residual Chlorine (TRC).

An application for permit renewal was received by the Department on July 18, 2002 and accepted by the Department on August 1, 2002.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

A compliance inspection without sampling was conducted on January 9, 2003. The City received the Department's Outstanding Wastewater Treatment Plant Award for exemplary environmental compliance for operations during 2002.

During the history of the previous permit, the Permittee has remained in compliance, based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department.

Two Administrative Orders were issued by the Department to the City during the previous permit cycle. The first, Order No. DE 99WQ-C135, was issued on May 27, 1999 to extend the submittal date for a new Operations and Maintenance Manual to August 1, 1999.

The second Order, No. DE 00WQCR-1669, was issued October 13, 2000 for the purpose of modifying several permit conditions. Briefly, the Order delayed the effective date of the final effluent limitations until the expiration date of the permit and modified several effluent monitoring requirements due to the installation of the UV disinfection system.

The City has complied with all requirements of the previous permit, except for submittal of an Additional Chemical Analysis of Influent and Effluent Report, Special Condition S10.C. This provision required the City to take concurrent samples of the influent and effluent twice during the permit cycle, once during the river's high flow season and once during the river's low flow season. The City has responded that the analytical laboratory they were using apparently mis-marked the influent sample results as effluent and may have committed additional errors. The City has subsequently switched to another laboratory and does not foresee this type of error recurring.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports.

Influent

Monthly influent characterization data are presented Table 1 in comparison to design loadings. Data reflect influent loadings reported in DMRs submitted for the months of June 2001 through May 2002.

Table 1: Characterization of Influent Loadings

| Parameter | One-year Average | Highest Monthly Loading | Percent of Monthly Design Loading | Maximum Monthly Design Loading |
|-------------------------------|-------------------------|--------------------------------|--|---------------------------------------|
| Flow, in MGD | 5.26 | 5.76 | 47.2 | 12.2 |
| BOD ₅ , in lbs/day | 12,349 | 13,873 | 56.7 | 24,465 |
| TSS, in lbs/day | 10,080 | 11,277 | 46.2 | 24,390 |

Effluent

The concentration of pollutants in the discharge was reported in the NPDES application and DMRs submitted to the Department. In the case of pollutants limited in the previous permit, the characterization is given in the context of the permit limit.

Conventional Pollutants

Average monthly effluent concentrations for BOD₅ and TSS are characterized for the months of June 2001 through May 2002 from DMR data submitted to the Department by the City. Fecal Coliform Bacteria data are expressed in terms of the geometric mean.

Table 2: Characterization of Effluent

| Parameter | One-year Average | Highest Monthly Average | Monthly Permit Limits |
|--|------------------|-------------------------|-----------------------|
| BOD ₅ , in mg/L | 13.5 | 22 | 30 |
| TSS, in mg/L | 6.2 | 15 | 30 |
| Fecal Coliform Bacteria, in #colonies/100 mL | 27.8 | 115 | 200 |

The highest monthly averages for each parameter occurred in June 2001 and do not reflect typical effluent concentrations. BOD concentrations are typically between 10 and 15 mg/L and TSS is usually below 10 mg/L. During the early portion of the characterization period, Fecal Coliform concentrations varied widely, probably due to treatment plant staff's unfamiliarity with the newly installed UV system, but more recently bacteria levels are in the single digits.

pH

The minimum pH value reported by the City during the 1-year characterization period was 6.2 and the maximum was 7.8.

Ammonia and Total Residual Chlorine

In the previous permit, average monthly and maximum daily effluent limits were established for Ammonia and Total Residual Chlorine. Table 3 contains an effluent characterization of these pollutants, based on sampling conducted from June 1, 2001 through May 31, 2002, and their respective permit limits.

Table 3: Ammonia and Residual Chlorine Effluent Characterization

| Parameter | Units | Highest Reported Average Monthly | Average Monthly Permit Limit | Highest Reported Maximum Daily | Maximum Daily Permit Limit |
|-------------------------|-------|----------------------------------|------------------------------|--------------------------------|----------------------------|
| Ammonia | mg/L | 4.1 | 43 | 8.3 | 43 |
| Total Residual Chlorine | mg/L | 0.2 | 0.20 | 0.3 | 0.50 |

DO and Temperature

Although DO and Temperature were not regulated in the previous permit, monitoring was required to determine the reasonable potential of the discharge to violate the water quality standards. The permit application contained the following summary for the period from June 1, 2001 through May 31, 2002.

Table 4: DO and Temperature Effluent Characterization

| Parameter | Units | Min/Max Daily Value | One-year Average Value | Number of Samples |
|----------------|-------|---------------------|------------------------|-------------------|
| DO | mg/L | 1.1 (min.) | 7.2 | 365 |
| Temp. (Winter) | °C | 15 (max.) | 13 | 90 |
| Temp. (Summer) | °C | 23 (max.) | 21 | 92 |

The lowest reported DO concentration occurred in July 2001, although during most of the month of November 2001 DO levels were below 2 mg/L.

Priority Pollutants

During the previous permit cycle the City sampled the effluent for priority pollutants three times. Results of the priority pollutant scans were reported in the application for permit renewal. All metals results are reported in Table 5. No toxic organic compounds were found to be present at concentrations higher than the quantitation level.

Table 5: Priority Pollutant Effluent Characterization

| Parameter | Units | Maximum Value | Number of Samples | Number of Detects |
|--------------------------------|-------|---------------|-------------------|-------------------|
| Antimony | µg/L | <250 | 3 | 0 |
| Arsenic | µg/L | <5 | 3 | 0 |
| Beryllium | µg/L | <3 | 3 | 0 |
| Cadmium | µg/L | <2 | 3 | 0 |
| Chromium | µg/L | <10 | 3 | 0 |
| Copper | µg/L | 46 | 3 | 3 |
| Lead | µg/L | <2 | 3 | 0 |
| Mercury | µg/L | <0.5 | 3 | 0 |
| Nickel | µg/L | <30 | 3 | 0 |
| Selenium | µg/L | <250 | 3 | 0 |
| Silver | µg/L | <10 | 3 | 0 |
| Thallium | µg/L | <250 | 3 | 0 |
| Zinc | µg/L | 153 | 3 | 3 |
| Cyanide | µg/L | <5 | 3 | 0 |
| Total Phenols | µg/L | <125 | 3 | 0 |
| Hardness, as CaCO ₃ | mg/L | 241 | 3 | 0 |

PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent

limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from the approved *Wastewater Treatment Facilities Plan*, dated May 1995, and prepared by JUB Engineers, Inc. and are as follows:

Table 6: Design Criteria for the City of Kennewick WWTP

| Parameter | Design Quantity |
|-----------------------------------|-----------------|
| Monthly average flow (max. month) | 12.2 MGD |
| BOD ₅ influent loading | 24,465 lbs/day |
| TSS influent loading | 24,390 lbs/day |
| Total Nitrogen loading | 4,000 lbs/day |
| Design population equivalent | 67,004 persons |

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by Federal and State regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (Federal) and in Chapter 173-221 WAC (State). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

Concentration-based effluent limits

The following technology-based limits for pH, fecal coliform, BOD₅, and TSS are taken from Chapter 173-221 WAC are:

Table 7: Technology-based Limits

| Parameter | Limit |
|-------------------------------------|--|
| pH: | shall be within the range of 6 to 9 standard units. |
| Fecal Coliform Bacteria | Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL |
| BOD ₅ (concentration) | Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L |
| TSS (concentration) | Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L |

Mass-loading effluent limits

The following technology-based mass limits for BOD and TSS are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent mass loading limits were calculated as the maximum monthly design flow (12.2 MGD) x concentration limit (30 mg/L) x conversion factor (8.34) = 3,052 lbs/day.

The weekly average effluent mass loading limits are calculated as 1.5 x monthly loading = 4,579 lbs/day.

Total Residual Chlorine

Although the City routinely utilizes its UV system to disinfect the discharge, the chlorination system has been retained as a backup. The previous permit contained an average monthly Chlorine limit of 0.20 mg/L and a maximum daily limit of 0.50 mg/L. The facility is able to comply with these performance limits; therefore, this permit retains the same limits.

The previous permit contained effluent limits expressed in terms of concentrations and mass loadings. However, 40 CFR 122.45(f)(ii) allows the expression of limits as concentrations. In

the opinion of the Department, specifying limits in mg/L is more straightforward, because consideration of flow is not required. Consequently, the permit is easier to administer by the Department. Special Condition S2.A of this permit requires the Permittee to continue reporting mass loadings of Chlorine discharged to the river. (This permit contains mass loading effluent limits for BOD and TSS because the Federal secondary treatment standards require 85% removal of these wastewater constituents.)

Ammonia

The previous permit contained performance-based interim average monthly and maximum daily effluent limits of 43 mg/L. Final limits were 'to be determined by the Department after submittal, by the City, of the as-built design criteria of the upgraded treatment plant, the Eddy Evaluation Study, and two years of performance data'. Administrative Order No. DE 00WQCR-1669 extended the interim limits to the permit expiration date.

This permit retains the maximum daily limit of 43 mg/L from the previous permit, because this concentration is more stringent than the calculated water quality-based limit of 65.1 mg/L. (See the LIMIT.XLS spreadsheet in Appendix C.) However, the water quality-based average monthly limit of 27.3 mg/L is more stringent than the 43 mg/L limit in the previous permit. See the section of this fact sheet titled **Consideration of Surface Water Quality-Based Limits for Numeric Criteria: Toxic Pollutants** for further discussion on development of the Ammonia criteria and effluent limits.

The previous permit contained effluent limits expressed in terms of concentrations and mass loadings. However, 40 CFR 122.45(f)(ii) allows the expression of limits as concentrations. In the opinion of the Department, specifying limits in mg/L is more straightforward, because consideration of flow is not required. Consequently, the permit is easier to administer by the Department. Special Condition S2.A of this permit requires the Permittee to continue reporting mass loadings of Ammonia discharged to the river.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a State regulation designed to protect the beneficial uses of the surface waters of the State. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

Numerical Criteria for the Protection of Aquatic Life

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

Numerical Criteria for the Protection of Human Health

The State was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

Narrative Criteria

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

Antidegradation

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when receiving waters are of higher quality than the criteria assigned, the existing water quality shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in this permit. The discharges authorized by this permit should not cause a loss of beneficial uses.

Critical Conditions

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

Description of the Receiving Water

The facility discharges to the Columbia River, which is designated as a Class A receiving water in the vicinity of the outfall. Other nearby point source outfalls include the City of Richland's wastewater treatment plant outfall and the City of Pasco's wastewater treatment plant outfall, as well as several industrial and Hanford Nuclear Reservation outfalls. There are no documented non-point sources of pollutants to the river; however, the Department acknowledges there may exist some undocumented discharges of stormwater from urban and agricultural areas. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

Surface Water Quality Criteria

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Table 8: Applicable Water Quality Criteria

| Parameter | Criteria |
|------------------|--|
| Fecal Coliforms | 100 organisms/100 mL maximum geometric mean |
| Dissolved Oxygen | 8 mg/L minimum |
| Temperature | 20°C maximum or incremental increases above background (See following text for further information regarding temperature criterion.) |
| pH | 6.5 to 8.5 standard units |
| Toxics | No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge) |

WAC 173-201A-130(21) states: Temperature shall not exceed 20.0°C due to human activities. When natural conditions exceed 20.0°C, no Temperature increase will be allowed which will raise the receiving water Temperature by greater than 0.3°C; nor shall such temperature increases, at any time, exceed $t=34/(T+9)$.

According to the most current approved 303(d) list of water quality-impaired waterbodies, adopted by the State in 1998, this segment of the Columbia River is considered impaired for Temperature, Total Dissolved Gas and sediment bioassay. Federal and private dams are considered by the Department and EPA to be the major sources of exceedances of the Temperature and Total Dissolved Gas water quality criteria. Total Maximum Daily Load (TMDL) Studies are in progress for both parameters.

Mixing Zones

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

Consideration of Surface Water Quality-Based Limits for Numeric Criteria

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows.

Dilution Factors

Three methodologies were used in determining dilution factors for this permit cycle. They were: retaining the existing dilution factors, calculating new dilution factors using a mass-balance algorithm, and incorporating the results of the Effluent Mixing Zone Study the City conducted in 1997. According to the fact sheet associated with the previous permit, the dilution factors of effluent to receiving water that occur within these zones were determined at the critical condition by the use of the RIVPLUME5 spreadsheet. The dilution factors in the previous permit are 21.2 (acute) and 126 (chronic). Unfortunately, the documentation explaining development of the

dilution factors was not preserved. However, since these dilution factors have undergone public review and have been effective for the past five years, they are regulatory valid dilution factors.

In accordance with WAC 173-201A-100(8)(a), dilution factors can be determined utilizing the following mass-balance algorithm:

$$(Q_a + Q_e)/Q_e$$

where

Q_a is the regulatory-defined fraction of the 7Q10 critical season flow; and,
Q_e is the regulatory-defined effluent flow.

The 7Q10 flow is defined as the seven day average low river flow with a recurrence interval of ten years. The fact sheet associated with the previous permit determined the 7Q10 flow for this stretch of the river to be 50,733 cubic feet per second (cfs), or 32,787 MGD, based on river flow records from 1960 through 1994. Two and one-half percent of the 7Q10 flow is used for determination of the acute dilution factor. Twenty-five percent of the 7Q10 flow is used for determination of the chronic dilution factor.

Table 9: Mass-Balance Dilution Factors

| Parameter | Acute | Chronic |
|--|--------------|----------------|
| Q _a (Ambient Flow) | 819 MGD | 8,196 MGD |
| Q _e (Effluent Flow) | 6.19 MGD | 5.76 MGD |
| Aquatic Life-based Dilution Factors | 133 | 1,424 |

Finally, the City's engineering consultants, JUB Engineers, Inc., developed dilution factors as part of Effluent Mixing Zone Study required by the NPDES Permit issued in 1993. The analysis utilized the CORMIX model. A narrative description of the model's inputs and results can be found on pages 17 through 22 of the report, *City of Kennewick Effluent Mixing Zone Study*, December 1997. The analysis was based on 'design year flows', the lowest of which significantly exceeds present day flows. Table 10 presents the results of the analysis and is reproduced from page 22 of the report.

Table 10: CORMIX Dilution Factors

| Design Year | Effluent Flow Volume | Acute Dilution Factors | Chronic Dilution Factors |
|--------------------|-----------------------------|-------------------------------|---------------------------------|
| 1997 | 9.53 | 56.4 | 161.5 |
| 2002 | 13.13 | 41.0 | 113.2 |
| 2007 | 14.57 | 37.2 | 103.0 |
| 2012 | 16.07 | 34.0 | 92.5 |
| 2014 | 20.20 | Not Available ^a | 66.5 |

a-CORMIX was not able to run this case. However, an acute dilution factor of 29.8 was obtained for a treatment plant flow of 18.3 MGD.

The RIVPLUME5 model was not used to recalculate dilution factors for this permit because this methodology is not considered appropriate for a discharge through a multi-diffuser array in a deep river.

The dilution factors established in the previous permit, 21.2 (acute) and 126 (chronic), were retained in this permit in accordance with WAC 173-201A-100(6), which states that the 'size of the mixing zone shall be minimized' to the extent possible. Although the criteria used to determine these dilution factors cannot be documented, these values are the most conservative of the three methods described in the above paragraphs and do not result in a reasonable potential for pollutants in the discharge to exceed the water quality criteria. The pollutants of concern in the City's discharge are Ammonia, Chlorine, Copper and Zinc.

It should be noted that the Department does not consider the results of the 1997 Effluent Mixing Zone Study to be time-sensitive. The CORMIX analysis demonstrates that assuming an effluent flow volume of 9.53 MGD, which is approximately 50 percent greater than present flows (6 MGD), the dilution factors are significantly greater than those authorized in this permit. In the event reasonable potential is found during the development of a future permit using the existing dilution factors, the permit writer can utilize the results of the effluent mixing study to establish more generous dilution factors.

Reasonable Potential to Exceed the Water Quality Standards

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical condition for the Columbia River is the 7Q10. Ambient data at critical conditions in the vicinity of the City's outfall were taken from several sources: the fact sheet associated with the previous permit, the 2000 Hanford Site Surface Environmental Surveillance Project Report (metals data), and the City of Richland's Water Treatment Plant (Temperature and pH). Although calculation of dilution factors could not be reproduced, the flow values in the table were included in the interests of providing as complete a record as possible.

Table 11: Ambient Data Used in Reasonable Potential Analysis

| Parameter | Units | "Critical" Condition Value |
|--|---------------------------|----------------------------|
| Alkalinity | mg/L as CaCO ₃ | 68 ^a |
| Ammonia, Total | mg/L as N | 0.07 ^a |
| BOD ₅ | mg/L | 2.2 ^a |
| Copper | µg/L | 0.55 ^b |
| Diffuser Depth | feet | 10.5 ^a |
| Diffuser Length | feet | 160.2 ^a |
| Dissolved Oxygen | mg/L | 9.2 ^a |
| Fecal Coliform Bacteria | # colonies /100 ml | 40 ^a |
| Flow, 7Q10 | cfs | 50,733 ^a |
| Flow, 30Q5 | cfs | 61,092 ^a |
| Flow, Harmonic Mean | cfs | 97,839 ^a |
| Hardness | mg/L as CaCO ₃ | 55.0 ^a |
| pH | Standard Units | 8.3 ^c |
| Roughness (Manning) | n | 0.035 ^a |
| Temperature | °C | 22.2 ^c |
| Velocity | ft/s | 0.66 ^a |
| Width of River | feet | 1,580 ^a |
| Zinc | µg/L | 1.8 ^b |
| a-Source: Fact sheet associated with the previous (1998-2003) NPDES Permit, pp. 17-18. | | |
| b-Source: <u>2000 Hanford Site Surface Environmental Surveillance Project Report: Surface Water and Sediment Surveillance</u> , Table B.6, Richland Pumphouse data. The above values are the averages of 41 samples. | | |
| c-Source: City of Richland Water Treatment Plant, river intake monitoring data, 90 th percentile of daily data for July, August and September of 2000, 2001 and 2002. | | |

BOD₅--This discharge with technology-based limitations results in a small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions. As this fact sheet stated in the Mixing Zone discussion on page 19, the authorized dilution zones in this permit are extremely conservative, and could be made much larger and still be within the parameters of WAC 173-201A-100. However, BOD is considered a far field pollutant, and the permit writer did not have a reliable model to evaluate the far field impacts of the discharge. In the best professional judgment of the Department, given the magnitude of the City's discharge relative to the receiving water, technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

Temperature--The impact of the discharge on the Temperature of the receiving water was modeled by simple mixing analysis at critical condition. (See Appendix C for the spreadsheet.) The receiving water Temperature at the critical condition is 22.2°C and the effluent Temperature is 23°C. The predicted resultant Temperature at the boundary of the chronic mixing zone is 22.21°C and the incremental rise is 0.01°C.

When natural conditions exceed the numerical Temperature criterion of 20°C, WAC 173-201A-130(21) describes two criteria the City must satisfy to demonstrate compliance with the Temperature criterion. They are:

No Temperature increase will be allowed which will raise the receiving water Temperature by greater than 0.3 °C; nor shall such Temperature increases, at any time, exceed $t = 34/(T+9)$.

'T' represents the background Temperature, and 't' represents the maximum permissible Temperature increase measured at the chronic mixing zone boundary.

The City is in compliance with the first condition, relating to the maximum 0.3 °C increase, because the incremental increase in Temperature at the edge of the chronic mixing zone is 0.01°C.

Concerning the second condition, the maximum allowable increase was calculated as follows:

$$t = 34/(T+9)$$

$$t = 34/(22.2+9)$$

$$t = 1.09$$

Using the mass-balance calculation, the predicted incremental increase was determined to be 0.01 °C, which is significantly less than 1.09°C. Therefore, the City's discharge is in compliance with the second condition. Therefore, no effluent limitation for temperature was placed in this permit.

pH--The maximum pH reported by the City during the one-year characterization period was 7.8, well within the water quality criteria of between 6.5 and 8.5; therefore, no further analysis was conducted of the maximum reported value. The impact of minimum reported pH value of 6.3 was modeled using the calculations from EPA, 1988. (See Appendix C for the annotated spreadsheet, pHmix2.) Under critical conditions there was no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the technology-based effluent limitations of between 6 and 9 were placed in the permit.

Fecal Coliform--The highest single Fecal Coliform Bacteria effluent concentration reported by the City during the characterization period was 483 colonies/100 mL, the highest monthly average was 115 colonies/100 mL and the annual average was 27.8. The point of compliance for this parameter is the edge of the chronic mixing zone. Assuming a chronic dilution factor of 126, there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in this permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: Chlorine, Ammonia, Copper and Zinc. A reasonable potential analysis was conducted on these parameters to determine whether or not effluent limitations would be required in this permit.

The determination of the reasonable potential for Chlorine, Ammonia, Copper and Zinc to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The parameters used in the critical condition modeling are as follows: acute dilution factor 21.2, chronic dilution factor 126, receiving water hardness 55 mg/L, as CaCO₃.

Water quality criteria for metals in Chapter 173-201A WAC are based on the dissolved fraction of the metal.

The reasonable potential analysis was conducted using the Department's standard spreadsheet, REASPOT.XLS, which may be found in Appendix C of this fact sheet. The analysis found no reasonable potential for concentrations of Chlorine, Ammonia, Copper and Zinc present in the discharge to exceed the State's Surface Water Quality Standards.

Whole Effluent Toxicity

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment. Chronic toxicity tests measure various sub lethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC₅₀, EC₅₀, IC₂₅, etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center 360-407-7472 for a copy. Ecology recommends that Permittees send a copy of the acute or chronic toxicity sections(s) of their permits to their laboratory of choice.

The WET tests during effluent characterization indicate that no reasonable potential exists to cause toxicity in the receiving water; consequently, the Permittee will not be given WET limits and will only be required to retest the effluent prior to application for permit renewal in order to demonstrate that toxicity is not present in the effluent.

If the Permittee makes process or material changes which, in the Department's opinion, results in an increased potential for effluent toxicity, then the Department may require additional effluent characterization in a regulatory order, by permit modification, or in the permit renewal. Toxicity is assumed to have increased if WET testing conducted for submission with a permit application fails to meet the performance standards in WAC 173-205-020, "whole effluent toxicity performance standard". The Permittee may demonstrate to the Department that changes have not increased effluent toxicity by performing additional WET testing after the time the process or material changes have been made.

Human Health

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the State by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the applicant's discharge does not contain chemicals of concern based on existing data or knowledge. The discharge will be re-evaluated for impacts to human health at the next permit reissuance.

Sediment Quality

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has limited reasonable potential to violate the Sediment Management Standards. During the July 1997 outfall inspection carried out by the City, the resulting report noted "some silting around the diffusers out near the end [of the diffuser array]", but the streambed was otherwise clear.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground; therefore, no limitations are required based on potential effects to ground water.

COMPARISON OF EFFLUENT LIMITS WITH THE PREVIOUS PERMIT

| Parameter | Previous Permit Limits | | Proposed Permit Limits | |
|----------------|---|----------------------------|---|--------------------------|
| | Average Monthly | Average Weekly | Average Monthly | Average Weekly |
| BOD | 30 mg/L 85% removal 2,177 lbs/day | 45 mg/L 3,266 lbs/day | 30 mg/L 85% removal 3,052 lbs/day | 45 mg/L 4,579 lbs/day |
| TSS | 30 mg/L 85% removal 2,177 lbs/day | 45 mg/L 3,266 lbs/day | 30 mg/L 85% removal 3,052 lbs/day | 45 mg/L 4,579 lbs/day |
| Fecal Coliform | 200/100 mL | 400/100 mL | 200/100 mL | 400/100 mL |
| pH | 6 to 9 standard units | | 6 to 9 standard units | |
| Parameter | Average Monthly | Maximum Daily | Average Monthly | Maximum Daily |
| Chlorine | 0.20 mg/L 14.5 lbs/day | 0.50 mg/L 36.3 lbs/day | 0.20 mg/L | 0.50 mg/L |
| Total Ammonia | 43.0 mg/L 3,120 lbs/day | 43.0 mg/L 3,120 lbs/day | 27.3 mg/L | 43.0 mg/L |

BOD and TSS mass loading effluent limits were increased from the previous permit due to the increase of the design hydraulic capacity of the treatment plant. The reduced average monthly Ammonia limit is a revised water quality-based limit; it is believed the identical average monthly and maximum daily limits in the previous permit were an error. The chlorine limits are applicable only when the chlorine disinfection system is utilized.

Mass loading limits for Chlorine and Ammonia were dropped from this permit because they are repetitive of the concentration-based limits. See the TECHNOLOGY-BASED EFFLUENT LIMITS section of this fact sheet for more discussion on these matters.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in Special Condition S2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

Additional monitoring is required in order to further characterize the influent and effluent. Influent testing is required because, although the application for permit renewal requires three samples of effluent, no influent testing for toxic substances is otherwise required. Furthermore, sampling is required to occur during the autumn of 2006 in conjunction with WET Testing. This timing is required because, in the event toxicity is revealed through WET Testing, influent and effluent monitoring results may aid in identifying the source of the toxicity. Effluent priority pollutant results may be used in partial fulfillment of the requirements for the next application for permit renewal.

Permit requirements for influent and effluent sampling, and WET Testing have been minimized for this permit cycle due to the City's excellent compliance record. Therefore, the City is cautioned to take samples that are representative of wastewater discharged to and from the treatment plant.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. The laboratory at this facility is accredited for: Ammonia, BOD, Dissolved Oxygen, Fecal Coliform Bacteria, pH, Total Residual Chlorine, TSS.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The provisions of Special Condition S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in Special Condition S4. to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Special Condition S4. restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

This permit contains Special Condition S5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in Special Condition S7. to store and handle all residual solids (screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under Chapter 70.95J RCW and Chapter 173-308 WAC. The disposal of other solid waste is under the jurisdiction of the Benton-Franklin Health Department.

PRETREATMENT

Federal and State Pretreatment Program Requirements

Under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986), the Department of Ecology (Department) has been delegated authority to administer the Pretreatment Program (i.e. act as the Approval Authority for oversight of delegated POTWs). Under this delegation of authority, the Department has exercised the option of issuing wastewater discharge permits for significant industrial users discharging to POTWs which have not been delegated authority to issue wastewater discharge permits.

There are a number of functions required by the Pretreatment Program which the Department is delegating to such POTWs because they are in a better position to implement the requirements (e.g. tracking the number and general nature of industrial dischargers to the sewerage system). The requirements for a Pretreatment Program are contained in Title 40, part 403 of the Code of Federal Regulations. Under the requirements of the Pretreatment Program (40 CFR

403.8(f)(1)(iii)), the Department is required to approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) (40 CFR 403.8 (f)(1)(i)).

The Department is responsible for issuing State Waste Discharge Permits to SIUs and other industrial users of the Permittee's sewer system. Industrial dischargers must obtain these permits from the Department prior to the Permittee accepting the discharge (WAC 173-216-110(5)) (Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit. Such dischargers should contact the Department to determine if a permit is required.). Industrial dischargers need to apply for a State Waste Discharge Permit sixty days prior to commencing discharge. The conditions contained in the permits will include any applicable conditions for categorical discharges, loading limitations included in contracts with the POTW, and other conditions necessary to assure compliance with State water quality standards and biosolids standards.

The Department requires this POTW to fulfill some of the functions required for the Pretreatment Program in the NPDES permit (e.g. tracking the number and general nature of industrial dischargers to the sewage system). The POTW's NPDES permit will require that all SIUs currently discharging to the POTW be identified and notified of the requirement to apply for a wastewater discharge permit from the Department. None of the obligations imposed on the POTW relieve an industrial or commercial discharger of its primary responsibility for obtaining a wastewater discharge permit (if required), including submittal of engineering reports prior to construction or modification of facilities (40 CFR 403.12(j) and WAC 173-216-070 and WAC 173-240-110, et seq.).

Wastewater Permit Required

RCW 90.48 and WAC 173-216-040 require SIUs to obtain a permit prior to discharge of industrial waste to the Permittee's sewerage system. This provision prohibits the POTW from accepting industrial wastewater from any such dischargers without authorization from the Department.

Requirements for Routine Identification and Reporting of Industrial Users

The NPDES permit requires non-delegated POTWs to "take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging to the Permittee's sewerage system". Examples of such routine measures include regular review of business tax licenses for existing businesses and review of water billing records and existing connection authorization records. System maintenance personnel can also be diligent during performance of their jobs in identifying and reporting as-yet unidentified industrial dischargers. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW is required to notify an industrial discharger, in writing, of their responsibilities regarding application for a

State waste discharge permit and to send a copy of the written notification to the Department. The Department will then take steps to solicit a State waste discharge permit application.

Requirements for Performing an Industrial User Survey

This POTW has the potential to serve significant industrial or commercial users and is required to submit an annual Industrial User Survey/Pretreatment Report. The goal of the survey is to develop a list of SIUs and PSIUs, and of equal importance, to provide sufficient information about industries which discharge to the POTW, to determine which of them require issuance of State waste discharge permits or other regulatory controls. An Industrial User Survey is an important part of the regulatory process used to prevent interference with treatment processes at the POTW and to prevent the exceedance of water quality standards. The Industrial User Survey also can be used to contribute to the maintenance of sludge quality, so that sludge can be a useful biosolids product rather than an expensive waste problem. An Industrial User Survey is a rigorous method for identifying existing, new, and proposed significant industrial users and potential significant industrial users. A complete listing of methodologies is available in the Department of Ecology guidance document entitled "Conducting an Industrial User Survey".

Duty to Enforce Discharge Prohibitions

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer. The first portion of the provision prohibits acceptance of pollutants which cause pass through or interference. The definitions of pass through and interference are in Appendix B of the fact sheet..

The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition wastes with excessive BOD, petroleum based oils, or which result in toxic gases are prohibited to be discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from the Department. The discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

As sufficient data becomes available, the Permittee shall, in consultation with the Department, reevaluate its local limits in order to prevent pass through or interference. Upon determination by the Department that any pollutant present causes pass through or interference, or exceeds established sludge standards, the Permittee shall establish new local limits or revise existing local limits as required by 40 CFR 403.5. In addition, the Department may require revision or establishment of local limits for any pollutant that causes an exceedance of the Water Quality

Standards or established effluent limits, or that causes whole effluent toxicity. The determination by the Department shall be in the form of an Administrative Order. In order to develop these local limits, the Department will provide environmental criteria or limits for the various pollutants of concern.

Support by the Department for Developing Partial Pretreatment Program by POTW

The Department has committed to providing technical and legal assistance to the Permittee in fulfilling these joint obligations, in particular assistance with developing an adequate sewer use ordinance, notification procedures, enforcement guidelines, and developing local limits and inspection procedures.

OUTFALL EVALUATION

The City conducted an outfall evaluation in July 1997. The inspection report noted that the diffusers were in good working order and that only a minimal amount of sediment deposition had occurred at the end of the diffuser array. Therefore, an outfall evaluation is not required during this permit cycle.

GENERAL CONDITIONS

General Conditions are based directly on State and Federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended State or Federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

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APPENDIX A -- PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on July 24, 2002 in the Tri-City Herald to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on August 12, 2003 in the Tri-City Herald to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to Water Quality Permit Coordinator, Department of Ecology, Central Regional Office, 15 West Yakima Avenue, Suite 200, Yakima, WA 98902.

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, 509/457-7105, or by writing to the address listed above.

This permit and fact sheet were written by Jim LaSpina.

APPENDIX B -- GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control, and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the Federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

CBOD₅ -- The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celsius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD₅ is given in 40 CFR Part 136.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring --Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over a short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

Pass through -- A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;
- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the State of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C -- TECHNICAL CALCULATIONS

WATER QUALITY-BASED EFFLUENT LIMITS FOR AMMONIA

| | Dilution (Dil'n) factor is the inverse of the percent effluent concentration at the edge of the acute or chronic mixing zone. | | | | | | Waste Load Allocation (WLA) and Long Term Average (LTA) Calculations | | | | | | | Statistical variables for permit limit calculation | | | | |
|-----------|---|----------------------|------------------------------|--------------------------------|-----------------------------|---------------------------|--|-------------|-----------|-------------|----------------------|------------------|--------------|--|------------------|------------------|------------------------|------|
| | Acute Dil'n Factor | Chronic Dil'n Factor | Water Quality Standard Acute | Water Quality Standard Chronic | Average Monthly Limit (AML) | Maximum Daily Limit (MDL) | WLA Acute | WLA Chronic | LTA Acute | LTA Chronic | LTA Coeff. Var. (CV) | LTA Prob'y Basis | Limiting LTA | Coeff. Var. (CV) | AML Prob'y Basis | MDL Prob'y Basis | # of Samples per Month | |
| PARAMETER | | | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | decimal | decimal | ug/L | decimal | decimal | decimal | n | |
| Ammonia | 21.0 | 126.00 | 3100 | 500 | 27327.9 | 65100.0 | 65100 | 63000.00 | 20902.5 | 33228.3 | 0.60 | 0.99 | 20902.5 | 0.60 | 0.95 | 0.99 | 12.00 | 1.00 |

REASONABLE POTENTIAL CALCULATION

| | | | | | | | | | | | | | | | | | |
|---|--------------------------------------|--------------------------------------|---|------------------------------|---------|---------------------------------|---------------------|--------------|---------------------------|-------|---|-----------------|------|--------------|------------|--------------------|----------------------|
| procedure and calculations are done per the procedure in <u>Technical Support Document for Water Quality-based Toxics Control</u> , U.S. EPA, March, 1991 (EPA/505/2-90-001) on page 56. User input columns are shown with red headings. Corrected formulas in col G and H on 5/98 (GB) | | | | | | | | | CALCULATIONS | | | | | | | | |
| | | | | State Water Quality Standard | | Max concentration at edge of... | | | | | | | | | | | |
| | Metal Criteria Translator as decimal | Metal Criteria Translator as decimal | Ambient Concentration (metals as dissolved) | Acute | Chronic | Acute Mixing Zone | Chronic Mixing Zone | LIMIT REQ'D? | Effluent percentile value | | Max effluent conc. measured (metals as total recoverable) | Coeff Variation | s | # of samples | Multiplier | Acute Dil'n Factor | Chronic Dil'n Factor |
| Parameter | Acute | Chronic | ug/L | ug/L | ug/L | ug/L | ug/L | | | Pn | ug/L | CV | | n | | | |
| Ammonia | | | 70.00 | 3100 | 500 | 380.89 | 122.31 | NO | 0.95 | 0.979 | 8300 | 0.60 | 0.55 | 144 | 0.80 | 21 | 126 |
| Chlorine | | | | 19.00 | 11.00 | 11.09 | 1.87 | NO | 0.95 | 0.981 | 300.00 | 0.60 | 0.55 | 160 | 0.78 | 21 | 126 |
| Copper | 0.996 | 0.996 | 0.55 | 9.69 | 6.81 | 7.01 | 1.64 | NO | 0.95 | 0.368 | 46.00 | 0.60 | 0.55 | 3 | 3.00 | 21 | 126 |
| Zinc | 0.996 | 0.996 | 1.80 | 68.96 | 62.97 | 23.28 | 5.41 | NO | 0.95 | 0.368 | 153.00 | 0.60 | 0.55 | 3 | 3.00 | 21 | 126 |

APPENDIX D -- I&I EVALUATION GUIDANCE

INFILTRATION-INFLOW (I/I) REPORT GUIDELINES

Special condition S4.E. of your National Pollutant Discharge Elimination System (NPDES) permit requires the annual submission of an I/I report. This report is required in order that the municipality control I/I in their sewage system to prevent:

1. Hydraulic overloading of the treatment plant;
2. Hydraulic overloading of the collection system resulting in over-flows and/or bypasses of sewage; and
3. Dilute sewage that inhibits treatment system effectiveness or its ability to meet secondary effluent standards.

In order to comply with this requirement, the municipality shall submit, each year, a report (see attached format) which includes:

1. The average monthly flow and total rainfall for each month for the past year (for lagoons this means influent flows), together with a graph (see example) plotting a comparison of these data.
2. The average and peak design hydraulic capacity for the plant.
3. The design population equivalent for the treatment plant and the population served by the facility, per month, for the past year.
4. The I/I value for each year and the percent of average design capacity each year's I/I represents.
5. The I/I percent increase or reduction for each year subsequent to the base year I/I (year I/I reports were initiated).
6. The additional lengths of sewer lines added to the collection system, per month, for the past year.

NOTE:

The difference between the highest and lowest monthly average flow will be considered the amount of I/I the treatment facility is experiencing. After the base study, if the amount of I/I increases by 15 percent from that found in the base year based on equivalent rainfall, then the report shall additionally give an explanation for the increased I/I and what corrective measures are planned. Any questions about the report should be directed to the appropriate district engineer.

, 20__ to , 20__

Plant Design Capacity

Peak Design Flow:
Average Design Flow:
Population Equivalents:

Infiltration/Inflow Summary

| Year | I/I | % over Base I/I | % of Aver. Des. Flow |
|------|-----|--------------------|-------------------------|
| | | | |
| | | | |
| | | | |
| | | | |

Comments:

APPENDIX E -- RESPONSE TO COMMENTS

No comments were received by the Department of Ecology.